East Waterway Anthropogenic Background Meeting #1 Supporting Information

East Waterway Group

September 9, 2020

Meeting Agenda

- Introductions
- Background
- Problem definition
- Goals
- Review conceptual site model

Planned Anthropogenic Background Meetings

- Meeting #1 (9/9/20) – State the problem and identify the goals of the evaluation, review the CSM
- Meeting #2 (9/15/20) – Complete CSM discussions (if needed)
- Meeting #3 (9/24/20) – Review available Green River data
- Meeting #4 (10/7/20) – Review available EW laterals, LDW laterals, and LDW bedded sediment data
- Meeting #5 (10/21/20) – Data sufficiency evaluation
- Meeting #6 (11/4/20) – Discuss data analysis approach
- Meeting #7 (11/18/20) – if needed

Problem Definition

- Anthropogenic Background (AB) is important to
  - Develop remediation goals for 3 COCs
  - Assess remedy performance over time
- AB definition (CERCLA):
  - *Natural and human-made substances present in the environment as a result of human activities (not specifically related to the CERCLA release in question)*
- Total PCBs, dioxins/furans, and arsenic have risk-based preliminary remediation goals (PRGs) below background and therefore require AB estimation.

Problem Definition (Cont'd.)

From *Frequently Asked Questions About the Development and Use of Background Concentrations at Superfund Sites: Part One, General Concepts* (EPA, 2018):

The CERCLA program normally does not set cleanup levels below anthropogenic background concentrations [...due to] cost-effectiveness, technical practicability, and the potential for recontamination of remediated areas by surrounding areas with elevated background concentrations.

Problem Definition (Cont'd.)

- The focus of this evaluation is to determine if available data are sufficient to support estimating anthropogenic background concentrations for PCBs, dioxins/furans and arsenic.

- Establishment of AB concentrations will allow EPA to issue a final Record of Decision (ROD) for the EW.

Problem Definition (Cont'd.)

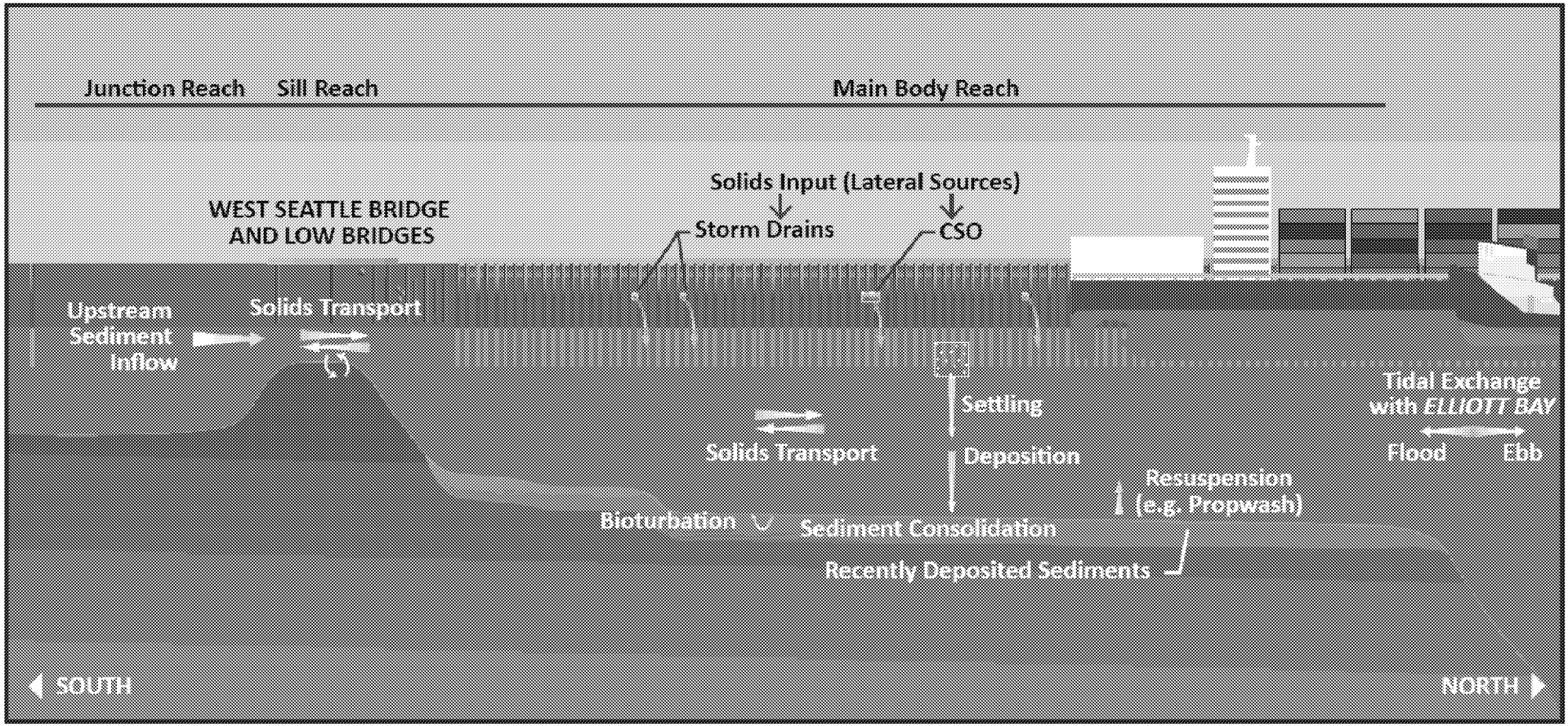
- Vast majority of suspended sediments that accumulate in the EW originate from the Green River, with smaller portions but at higher concentrations originating from
  1. Lateral inputs, such as storm drains and CSOs, entering the EW along the EW drainage basin
  2. Lateral inputs along the Lower Duwamish Waterway (LDW) that flow downstream into the EW
  3. LDW bed sediments that are resuspended and move downstream into the EW

Goals

The goals of this evaluation are to:

1. Review the relative contribution of each type of sediment input to the EW based on the CSM
2. Identify and evaluate available concentration data for total PCBs, dioxin/furans, and arsenic for each of the sediment inputs to the EW
3. Determine if available data is acceptable and adequate to develop anthropogenic background concentrations for total PCBs, dioxin/furans, and arsenic
4. Develop a data analysis approach for estimating anthropogenic background concentrations

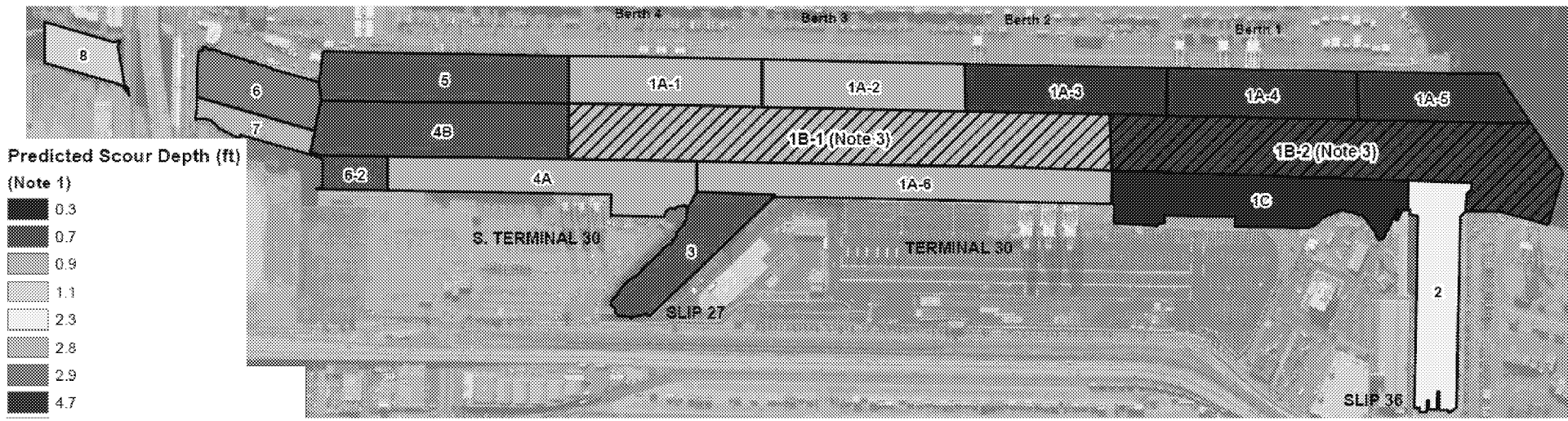
Conceptual Site Model (FS Section 5.1)



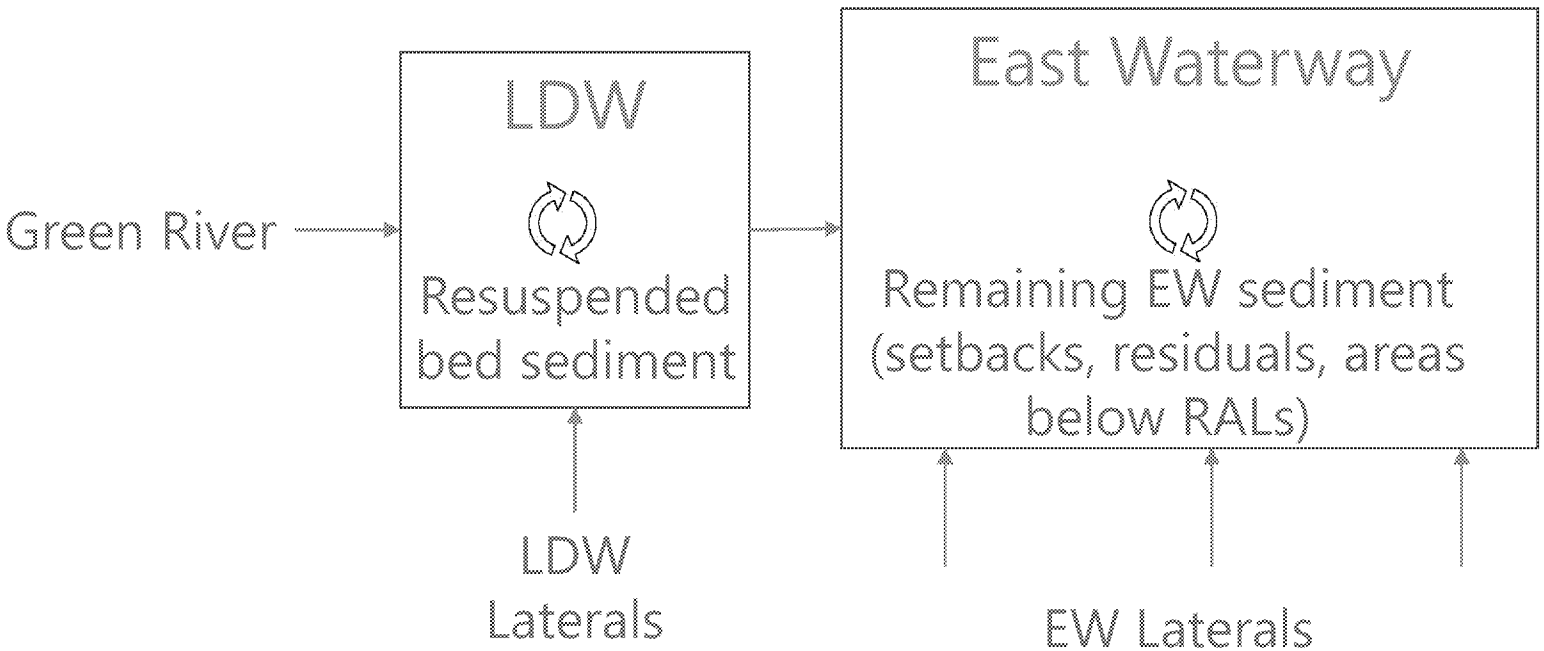
- Solids Inputs
- Mixing
- Structures

Conceptual Site Model

- Net sediment deposition rate = 1.2 cm/yr
  - >99% of sediment entering EW are silts and clays
- 20% to 33% of incoming sediment deposits in the EW
- 67% to 76% of EW lateral input solids deposit in the EW
- Most of the EW is predicted to have more than 2 feet of propwash mixing



Components Influencing Long Term EW Sediment Concentrations



Incoming Solids Concentrations (Future Conditions; from FS Table 5-5)

COC	Scenario	Upstream			EW Laterals		Total Depositing
		Green	LDW Lateral	LDW Bed	EW SDs	EW CSOs	
% Sediment Mass Loading (Future Base Case)		*98.9%*	*0.55%*	*0.24%*	*0.30%*	*0.02%*	*100%*
PCB (µg/kg dw)	Base Case	42	300	350	190	260	45
	Low	5.0			55	240	7.7
	High	80			450	630	85
Arsenic (mg/kg dw)	Base Case	9.0	13	16	10	5.0	9.1
	Low	7.0			9.0	6.0	7.1
	High	10			20	9.0	10
Dioxin/ Furan (ng TEQ/kg dw)	Base Case	6.0	20	26	22	16	6.2
	Low	2.0			12	7.6	2.2
	High	8.0			45	37	8.3

FS CSM Roadmap

- Section 5: Sediment Transport and Box Model Description
- Appendix A: Technical Possibility Evaluation
- Appendix B: Modeling Memoranda
  - Sediment transport modeling
  - Scour analysis
  - Dredge residuals
  - Lateral inputs
- Appendix J: Model Sensitivity and Bounding Runs

Questions/Discussion